Wyoming Landscape Conservation Initiative

"Conserving world-class wildlife resources. Facilitating responsible development."

WLCI Conservation Action Plan

Cover Photo: Wyoming Youth Conservation Corp building wildlife friendly fencing.

Wyoming Landscape Conservation Initiative Conservation Action Plan

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For WLCI Local Project Development Teams

Table of Contents

Executive Summary

The Wyoming Landscape Conservation Initiative (WLCI) is a long-term, science-based effort to conserve and enhance fish and wildlife habitats while facilitating responsible development through local collaboration and partnerships. WLCI partners include federal, state, and local agencies, private landowners, industry, and non-governmental organizations. The collaborative effort of the partnership is unique, providing a means to address multiple concerns at locations and scales that are relevant and an ability to leverage resources that might not otherwise be available for singly implemented projects.

To ensure the successful implementation of WLCI and effective collaborations among partners, the WLCI Coordination Team (CT) developed the WLCI Strategic Plan and Operations Plan. Collectively these plans identify the goals, strategies, and structural framework needed to inform strategic approaches to help conserve fish and wildlife, monitor conservation actions to inform future projects, and improve communication and sharing of data and information among WLCI partners. Both plans identify the need to incorporate science information and principles into conservation actions and to identify conservation priority areas by WLCI Local Project Development Teams (LPDTs).

To address these needs, the CT met with LPDTs and other WLCI partners to discuss their conservation interests and collaborative approaches to support conservation planning. The outcome of these meetings was the development of an iterative approach to conservation planning which provided team members numerous opportunities to discuss conservation ideas and needs, and to develop a consensus of priorities that would have conservation implications at landscape scales.

Between 2010 and 2012, the CT met with LPDTs and other partners to discuss important conservation issues, priorities and objectives, and to identify key geographic areas to implement conservation actions. The result of these endeavors were used to establish consensus-based landscape conservation priorities for WLCI and to present key issues and proposed conservation actions by each of the LPDTs during the next five years.

This conservation action plan summarizes conservation priorities and issues, and provides detailed information on past, current, and proposed conservation actions. This plan is intended to guide the development and implementation of;

- future conservation actions,
- establishment of monitoring and science assessments,
- establishment of measurable objectives at the project level,
- evaluation of the programmatic effectiveness of WLCI at addressing conservation needs at local to landscape scales.

Development of the WLCI Conservation Action Plan

Southwest Wyoming has tremendous wildlife and habitat resources that are being affected by development, changing weather and climate patterns, invasive species, and other land use pressures. To meet these challenges, land management agencies and wildlife managers established the Wyoming Landscape Conservation Initiative (WLCI), as a long-term science-based effort to conserve and enhance fish and wildlife habitats while facilitating responsible development through local collaboration and partnerships. WLCI partners include federal, state, and local agencies, private landowners, industry, and non-governmental organizations.

To ensure the successful implementation of WLCI and effective collaborations among partners, WLCI developed the WLCI Strategic Plan and Operations Plan. Collectively these plans identify the goals, strategies, and structural framework needed to develop strategic actions and approaches to help conserve fish and wildlife and improve communication and sharing of information and data among partners.

Both plans also identify the need to incorporate science information and principles into conservation actions. One of the unique features of WLCI is the application of science to decision-making processes. Scientific work conducted for the WLCI improves the understanding of ecosystems and their response to various drivers of change, provides information and data to support on-the-ground decision-making and conservation planning, and supports the use of adaptive management and best management practices.

The role of the U.S. Geological Survey (USGS), as a partner in the WLCI, is to provide multidisciplinary scientific and technical assistance support to WLCI partners and to advance the overall scientific understanding of ecosystems in the Southwest Wyoming landscape. As part of these efforts, USGS developed science strategies to help guide the science work that is conducted by all WLCI partners. Many of WLCI's partners conduct science activities that support conservation planning and actions, some of which include habitat assessments, fish and wildlife studies, species movement and habitat use assessments, invasive plant species surveys, and monitoring the effectiveness of conservation actions. Information from science activities is used to guide and improve future habitat treatments and to develop best management practices. In addition, science data and spatial products (GIS maps) help define conservation issues and actions.

One of the most important tenets of WLCI is the development of Local Project Development Teams (LPDTs) to facilitate local participation and foster local involvement with conservation planning and conservation actions. These teams are located geographically (figure1-1) with involvement by local biologists, range specialist, weed and pest specialist, landowners, ranchers, and other interested parties.

During the first several years of WLCI, the solicitation of conservation projects for funding was primarily through an annual request for proposals to LPDTs. Proposal requests did not directly state specific conservation strategies, goals, or objectives. Instead, evaluation criteria, used to rank conservation proposals for funding, did include broadly stated conservation goals and objectives. This approach was considered a short-term solution until a more comprehensive approach toward strategic conservation planning could be developed. It was decided early in the

conservation planning process that WLCI would use the LPDTs to steward a local bottom-up approach to define conservation issues and priorities important to them.

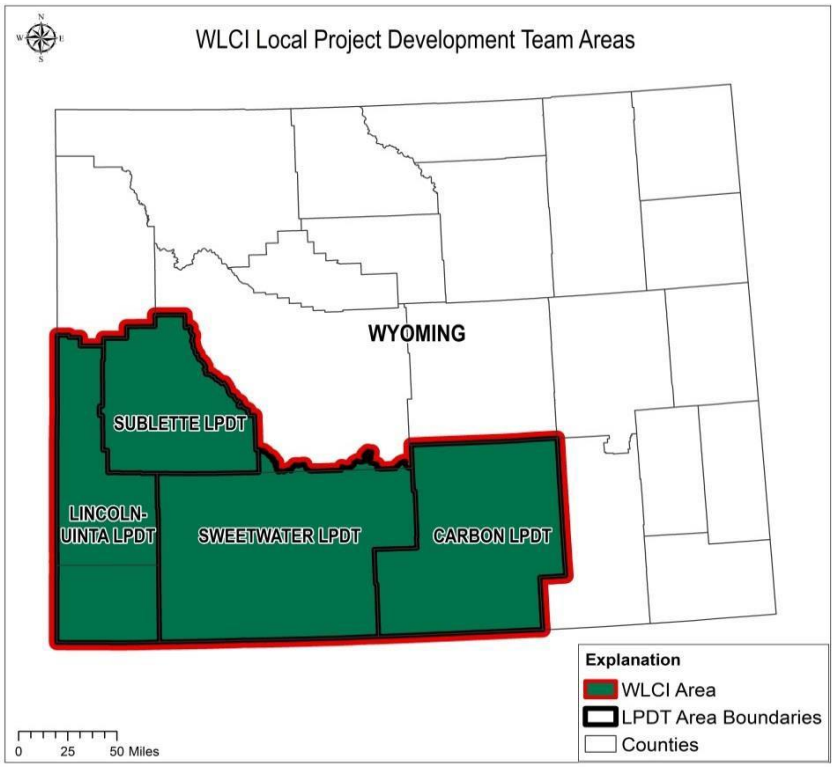


Figure 1-1. Local Project Development Team area boundaries (Lincoln/Uinta, Sublette, Sweetwater, Carbon).

The role of the WLCI Coordination Team (CT) would be to develop a consensus of conservation issues and priorities that were identified by LPDTs. These issues and priorities would be incorporated into a five-year conservation plan. Developing a consensus was accomplished through an iterative planning process (figure 1-2) during 2010 through 2012 until landscape priorities, conservation actions and geographic priority areas were identified and accepted with broad support.

Geographic areas were incorporated into GIS map layers. Preliminary boundaries were defined by existing spatial data layers such as Wyoming Game and Fish Department (WGFD) aquatic and terrestrial enhancement and crucial areas, watershed boundaries, and input by team members. Boundaries were further refined around projects with similar issues and conservation objectives.

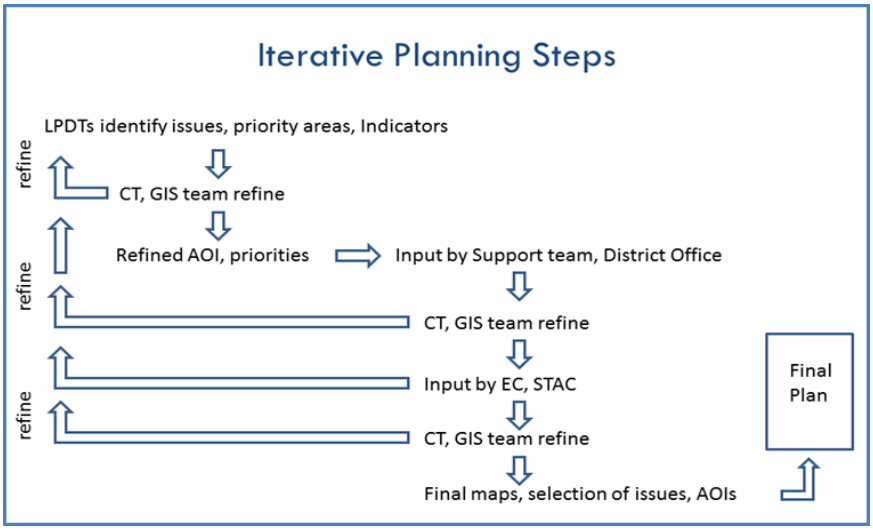


Figure 1-2. Iterative framework used by WLCI Local Project Development Teams (LPDTs) and other WLCI teams to review and comment on proposed landscape scale priorities, key issues and geographic priority areas. CT = Coordination Team, EC = Executive Committee.

LPDT members were also asked to identify funding and planning constraints that potentially could hinder successful implementation of conservation actions. To address these constraints, team members recommended the following actions:

- Support new and continuing projects needed to address landscape level objectives within a geographic area;
- Safeguard conservation accomplishments from future disturbances;
- Provide financial support to maintain project components;
- Evaluate and fund projects and conservation actions in need of rapid implementation;
- Provide team members flexibility to pursue conservation projects not identified in this plan.

Purpose of the WLCI Conservation Action Plan

One of the most important aspects of this plan is the continuation of cooperative partnerships between federal, state, county, local government, private landowners, agriculture, industry, and the public. This plan should help identify opportunities where WLCI partners may focus their combined energy and resources to support conservation efforts that keep southwestern Wyoming ecosystems and habitats healthy and ecologically functional.

Over the past several years, the CT has worked with the LPDT and other partners to develop conservation approaches that have ecological implications from local to landscape scales. This required a shift from individual, local, or highly specific habitat projects to conservation actions that focus objectives within and across geographic areas.

The primary purpose of this conservation plan is to serve as a roadmap of the WLCI conservation priorities and actions that it will be undertaking over the next five years (2013 – 2018). This plan will help WLCI:

- guide future conservation measures and actions within and outside of WLCI priority areas;
- guide the alignment of science activities with conservation priorities;
- provide context and direction for responding to unplanned rapid implementation of conservation actions;
- enhance internal and external funding opportunities;
- serve as a platform to evaluate the effectiveness of WLCI actions across southwest Wyoming;
- inform and incorporate WLCI priorities into planning activities by resource planners, regional assessments such as BLM's Rapid Ecoregional Assessments, and large landscape programs such as Landscape Conservation Cooperatives;
- and, encourage future collaborations on conservation projects and information sharing.

Part I of the conservation plan includes summaries of consensus-driven conservation priorities. Part II contains summaries of conservation objectives and geographic priority areas, and identifies the focal species and habitats being addressed by each LPDT. Part III contains specific project level information for each geographic priority area. Part III will be revised every year to document information about funded projects, project accomplishments, conservation and project level issues, and conservation objectives.

Part I: WLCI Landscape Conservation Priorities

Part I identifies the twelve WLCI landscape conservation priorities. These priorities reflect a consensus on the collective conservation issues and actions currently being implemented or proposed over the next five years. These priorities are being used by WLCI to:

- guide current and future conservation actions,
- improve the ranking of WLCI projects,
- evaluate the effectiveness of WLCI's conservation actions at regional and landscape scales,
- align science assessments and monitoring activities,
- inform future directives and budget requests associated with State and Washington level Programs, and
- inform activities by resource planners; the Bureau of Land Management (BLM) Rapid Ecoregional Assessments, and the Great Northern Landscape Conservation Cooperative.

WLCI landscape priorities are rooted in ecological principles. These principles include habitat and species diversity, habitat integrity, habitat fragmentation, habitat/ecosystem resistance and resilience, habitat state and transition, species connectivity and movement, species interactions, and population dynamics. Application of these principles is reflected in the underlying issues and conservation actions detailed later in this plan (Part III).

A number of these priorities directly benefit or protect big game [pronghorn *(Antilocarpa americana),* elk *(Cervus canadensis),* mule deer *(Odocoileus hemionus)* or moose *(Alces alces)*], sage-grouse *(Centrocercus urophasianus),* cutthroat trout *(Oncorhynchus clarkii*) and other important fish species [bluehead sucker *(Catostomus discobolus),* flannelmouth sucker *(Catostomus latipinnis),* roundtail chub *(Gila robusta),* and northern leatherside chub *(Lepidomeda copei)*]. However, many of these priorities and related habitat projects affect a myriad of species and their associated habitat that are not discussed in the plan.

Wetland Enhancement and Development

While wetland habitats are somewhat limited in southwest Wyoming, they support many species of wildlife. Many of these species are designated as wetland obligates. Many of the species are also regarded as sensitive or are listed as species of concern. This includes many residential and migratory bird species and amphibians.

WLCI will continue to support the enhancement and development of wetlands in the next five years. Actions being proposed include wetland projects to support the expansion of trumpeter swan *(Cygnus buccinator)* habitat and population numbers; wetland enhancements and maintenance projects at Seedskadee and Cokeville National Wildlife Refuges; wetland function associated with fish and riparian projects; fence projects designed to protect wetlands and springs; and wetland maintenance and development through activities (e.g. planting woody riparian vegetation) that support beaver and their expansion at select areas identified by WLCI partners.

The earliest involvement with wetland development by WLCI was through projects designed to improve or develop new habitats used by trumpeter swans. Trumpeter swans inhabit shallow marshes, ponds, lakes, and river oxbows where stable and shallow waters support dense emergent vegetation provide nesting and loafing sites. Nutrient-rich waters, with dense aquatic plant and invertebrate growth, provide the most suitable habitat. Adequate forage in the pre-nesting period (April to May) is critical for nesting success. Wyoming and Game and Fish staff have determined that early spring habitat is necessary for the reproductive success of swans nesting in Wyoming.

Since 2007, WLCI has supported recovery efforts of trumpeter swans through the establishment and maintenance of swan habitat in the Upper Green River Basin. Similar efforts are being conducted by U.S. Fish and Wildlife Service (USFWS) at Seedskadee National Wildlife Refuge. These efforts address recovery objectives of the Pacific Flyway Implementation Plan, for the Rocky Mountain Population of Trumpeter Swans, WGFD trumpeter swan expansion project, and the Greater Yellowstone Trumpeter Swan Initiative.

As identified in Trumpeter Swan recovery plans, an effective region-wide effort is needed for successful recovery. WLCI efforts will continue to be directed at federal and private lands. Part of these actions will be through the USFWS' Partners Program, WGFD Wetlands Program, WGFD trumpeter swan expansion project, and programs associated with the Natural Resources Conservation Service (NRCS). These actions will include protection, maintenance, and restoration of existing suitable habitat and creation of new wetland habitats. Part of the emphasis for these actions is placed on providing additional shallow water foraging and nesting habitat. Since 2003, WGFD has identified over 20 wetland projects to provide shallow water habitat on private lands that would greatly help sustain swan recovery. Protection efforts could conceivably use conservation tools such as habitat leasing and conservation easements.

Other past and future WLCI wetland activities include building fence enclosures to protect wetlands and springs. Fencing is considered a useful tool to protect woody vegetation to support beaver populations. The relationship between beaver and wetlands is well documented. There are several places in the WLCI area with conservation objectives directed to encourage the expansion of beaver populations to maintain and create new wetlands. These objectives will take many years to be addressed. Current and future activities include the protection and planting of woody vegetation and the removal of tamarisk *(Tamarix* spp.*)* and Russian olive *(Elaeagnus angustifolia).*

Partners involved with wetland projects include private landowners, BLM, USFS, USFWS Seedskadee and Cokeville National Wildlife Refuges and the USFWS Partners Program, NRCS, WGFD, Conservation Districts, and Trout Unlimited.

Maintenance of Quality at Crucial Habitats

Crucial Habitat areas in the WLCI are predominantly based on WGFD designations. These areas represent biologically and ecologically significant habitats that support important life stages needed for game species, native non-game species, unique species assemblages, and other ecologically important species or communities. These important aquatic and terrestrial habitats are often associated with Species of Greatest Conservation Need, movement and migration corridors and transitional habitats.

Many crucial habitats areas are challenged by competing land management interest and species needs. This has resulted in an increase of invasive plants and roads and reduced biodiversity. Maintaining the quality of the crucial habitats was identified by team members and affiliated partner agencies as a very important long-term priority. The tools being used by WLCI partners to maintain and protect these habitats includes use of forage reserves, habitat leases and conservation easements, fencing, controlling invasive plants, and by communicating and collaborating with land management agencies during planning activities.

WLCI has and will continue to support the use of forage reserves that are designed to maintain the quality of crucial habitats and other important areas. Reserves that serve to stockpile native forage help take pressure off crucial habitats during droughts or after treatments. There have been increased efforts over

the last few decades to increase the use of conservation easements and habitat leases to maintain important habitats.

One activity being conducted by WLCI is to identify where leases and easements are best suited. This information will be used in conjunction with other conservation plans (e.g. the WGFD Wyoming Range Mule Deer Plan and WGFD Strategic Habitat Plan, NRCS, sage-grouse core policy plans) to help WLCI determine the best easement and habitat leasing projects to support. Fence projects directed at maintaining the quality of crucial habitats may include enclosures to protect small sensitive areas or converting fences to meet wildlife standards. Fence conversions help re-distribute big game and other wildlife. The re-distribution of big game helps disperse browsing pressure by increasing access to other feeding areas.

WLCI supports many treatments aimed at protecting crucial habitats by controlling invasive plants. Invasive species treatments associated with this priority are designed to prevent or control the spread of invasive plants in crucial habitats. Finally, maps, conservation targets and other information about crucial habitats are shared with land management agencies and all WLCI partners so they can be considered during planning activities.

The need to maintain and protect specific crucial habitat areas is forever changing with many different challenges. Therefore, WLCI partners will continue to provide input about where these habitats need to be protected and maintained. The USGS Integrated Assessment and other assessments being conducted by WLCI partners will be used to provide additional information to help prioritize these activities. All WLCI partners are involved with these activities across each of the LPDTs.

Big Game Passage and Life Stage Connectivity

Removal of obsolete fences and converting fences to wildlife standards have been identified by LPDTs as one of the most effective ways to reduce wildlife stress, injury, and mortality; link big game to migration corridors and crucial seasonal habitats; and moderate some of the adverse ecological effects of habitat fragmentation. Fencing is also used to restrict movement of wildlife. This is usually done to guide big game to road crossings (e.g. underpasses). Fence conversions are routinely prioritized with data associated with big game use patterns from agency assessments and monitoring data, and numerous collaring studies (the Mesa, LaBarge, Cokeville, Atlantic Rim, and Baggs area).

Priorities for fence conversion designed to support wildlife passage and life stage connectivity include big game migration routes (pronghorn, mule deer, elk, moose) between crucial winter habitats, transitional habitats, parturition areas, and high priority habitats within energy fields (e.g. stipulation areas such as no surface occupancy areas) and adjacent habitats (e.g. crucial winter habitats and Areas of Critical Environmental Concern). Ongoing and proposed fence projects are distributed throughout the WLCI area.

WLCI is just one of many programs ensuring wildlife have access to important crucial and seasonal habitats and through energy fields. Fence conversions are planned over the next several years to occur on hundreds of thousands of acres across the WLCI area. Many WLCI partners are involved with fence conversion activities including many of the Conservation District offices, private landowners, grazing associations, WGFD, BLM, USFWS, USFS, and nongovernmental organizations such as Rocky Mountain Elk Foundation and the Wyoming Migration Initiative.

Fence projects designed to limit wildlife access are also being planned. These fence projects are currently associated with highways under or over passes (e.g. Highways 191, 30, and 789). Collectively, these activities are ensuring the safe movement of big game and preservation of long distance migration routes across some of Wyoming's busiest roads. Some of the proposed activities include expansions of these

areas and monitoring wildlife usage of passes and interactions with fences. Partners associated with the highway big game passages include WGFD, BLM, County Conservation Districts, and Wyoming Department of Transportation (WDOT).

There are many ongoing and planned studies by the WDOT and WLCI partners over the next five years to determine where big game crossings should be developed, how big game respond to underpasses and overpasses and where fences impede animal movements. WLCI will use this information to help prioritize related migration projects.

Enhance and Restore Big Game Corridors, Transition & Crucial Habitats

As stated previously, LPDT members identified crucial habitats as being some of the most important habitat resulting in numerous conservation projects designed to enhance and restore them. Many of these priority habitats have been designated by WGFD as crucial to conserving and maintaining populations of terrestrial and aquatic wildlife. Crucial habitats are based on significant biological and ecological values including habitats that support important life stages needed for maintaining game species, sensitive native non-game species, unique species assemblages and ecologically important species or communities. These include habitats that need to be maintained (identified previously in this report as a landscape priority) as well as habitats that have deteriorated and should be enhanced or restored. In particular, big game crucial winter habitats were identified by all LPDTs as one of the most important priority areas in need of enhancements and restoration, which is why they make up a large proportion of the geographic priority areas.

Conservation activities over the next five years are being implemented to enhance and restore crucial winter habitat and other crucial areas. LPDTs have identified several conservation approaches to ensure that big game corridors and transitional and crucial habitat areas remain stable and functional. The first approach is to ensure that the most important areas needed to sustain wildlife populations are addressed. Disturbance activities will be minimized at the core of the habitat if possible while enhancement and restoration actions that may cause additional disturbances or needing longer time intervals to recover occur at the margin or perimeter of habitat areas. More involved activities would be staggered and rested from livestock grazing and other activities. The second approach is to implement vegetation enhancements that encourage wildlife to stay in transitional areas longer. This would reduce the amount of time spent in crucial winter habitats. The third approach is to control invasive species in both transitional and crucial winter habitats to encourage long term stability and system resistance and resilience toward new invasions. The fourth approach is to ensure connectivity is maintained through fence conversions to wildlife friendly standards or seasonal lay down fences that better support animal movement. The final approach is to use habitat leasing where applicable to increase food and cover on private lands on crucial and transitional habitats. All WLCI partners are associated with this priority with projects being implemented across the WLCI area.

Sagebrush Maintenance, Enhancement and Restoration

Sagebrush *(Artemisia* spp.*)* communities have been identified as one of the most threatened communities in western North America. Many sagebrush locations have been identified as being in poor health with old and unproductive plants with few understory herbaceous plants. However, because of the need to protect sage-grouse and other sagebrush obligate species, habitat treatments are limited to those areas where maintenance or restoration of sagebrush stands is needed the most. This includes areas within sage-grouse core and non-core areas threatened by invasive plant species or conservation actions (described in other priority themes in this document) associated with crucial winter and transitional ranges that overlap with sagebrush systems. There are a few proposed projects that are directly targeted to benefit sage-grouse

through direct manipulation of sagebrush stands. These are designed to increase herbaceous plant species, diversify sagebrush age and stand structure, and increase suitable habitat for different life stage needs (for example increasing the abundance of small insects in early brood-rearing habitat). In general, maintenance and protective activities were identified by LPDTs as the preferred approach especially where there are large intact sagebrush patches or sagebrush areas that are associated with sage-grouse or other sagebrush obligates. Enhancement and restoration projects are being implemented in areas where more aggressive actions are needed to prevent additional loss of sagebrush from invasive plants, or where junipers *(Jupinerus* spp.*)* and other conifer species have encroached into sagebrush areas. A significant portion of the sagebrush and sage-grouse related treatments are located in the Kemmerer BLM Field Office area as part of the WLCI Ruby project which includes assessments, treatments and other actions that are prioritized by the WLCI Ruby focus group and the CT.

One of the highest priorities related to sage-grouse and suitable sagebrush communities are to protect these areas from invasive plant species and additional disturbance activities. Placing markers on new or converted fences continues to be a priority by LPDTs to protect sage-grouse. Placing markers on fencing is a very inexpensive way to reduce sage-grouse mortality. In addition, LPDTs will continue to work with land management agencies to identify areas in both sage-grouse core areas and non-core areas to treat invasive plant species.

Any projects in sagebrush communities follow best management practices for sage-grouse and other sagebrush obligates as identified by state and federal agencies. Projects in sage-grouse core areas are required to follow the Wyoming sage-grouse core area rules and guidelines with regard to leks and disturbance benchmarks. WLCI's efforts to maintain, enhance, and restore sagebrush at landscape scales are designed to meet objectives and actions identified in the USFWS's Greater Sage-grouse Conservation Objectives: Final Report (U. S. Fish and Wildlife Service, 2013).

Where suitable, treatment priorities are being designed to:

- maintain or enhance natural patterns (e.g. seasonal migrations), functions (e.g. cover/food), and processes (e.g. fire) in stable productive sagebrush systems;
- inter-seed sagebrush stands with forbs and grasses using native seed where appropriate;
- establish habitat leases with willing landowners to maintain habitat intactness and preserve sagebrush habitat;
- develop grass banks or forage reserves to provide management opportunities for sensitive big sagebrush communities (this may include, but is not limited to, assisting livestock operators with moving grazing to other areas during habitat improvement projects and rest periods);
- thin dense, over mature sagebrush to meet sage-grouse requirements;
- create mosaic patterns with diverse sagebrush densities and age structure;
- regenerate and restore sagebrush and increase grass and forb diversity;
- eradicate, reduce, or control of invasive plant species especially in areas crucial to important life stages;
- use fence markers to reduce sage-grouse mortality;
- reduce junipers that have encroached into sagebrush areas;
- protect springs and seeps within the sagebrush system;
- and, improve resistance and resiliency to invasive plants and prolonged droughts.

There are several sagebrush obligate species that will benefit from WLCI sagebrush habitat projects. Some of these species include the sage-grouse, burrowing owl *(Athene cunicularia)*, pygmy rabbit *(Brachylagus idahoensis)*, brewer's sparrow *(Spizella breweri)*, and sage thrasher *(Oreoscoptes montanus)*. These actions also benefit large and small predators, raptors, and large ungulates moving seasonally through these habitats.

Partners associated with proposed conservation actions will include private landowners, grazing associations, BLM, WGFD, NRCS, USFS, USFWS, industry, and County Conservation Districts and Weed and Pest agencies.

Aspen Structure, Regeneration, and Reduction of Encroached Conifer Species

Although aspen *(Populus tremuloides)* communities make up only a small portion of the WLCI area, they are one of the more productive communities in southwest Wyoming. Aspen woodlands and forest communities with aspen trees are often associated with diverse herbaceous and shrub understories. In the WLCI area, aspen generally occur where additional moisture exists on mountain slopes, rocky outcrops, within canyons or drainage areas, at seeps and springs, and along stream corridors. Aspen communities are important for birds in both migration and breeding seasons. Aspen communities also provide habitat for fawning and calving, cover, and forage for mule deer and elk and supports many other game and non-game species. Common issues associated with aspen communities include limited stand and age structure, insect and fungal disease, excessive herbivory, low regeneration, fragmentation, and competition with conifer species.

WLCI has funded numerous aspen projects, many of which are planned to continue for 10 to 20 years. Most aspen projects are multi-year, multi-partner collaborations using a variety of treatments tools and approaches and involve hundreds to thousands of acres. Current and future aspen projects are predominantly located in the Wyoming Front, Grey's River, Wind River Front, Little Mountain Ecosystem area, Seminole and Ferris Mountains, and along the northwest portion of the Sierra Madres. Treatment objectives are designed to:

- increase the health, vigor, and resilience of important aspen communities to withstand transforming events such as sudden aspen decline, disease, and prolonged droughts and climate change;
- increase regeneration rates of aspen and to create diverse age structures;
- reconnect aspen stands where appropriate to reduce fragmentation;
- restore high priority aspen stands to support resident and migratory songbirds;
- improve water quality and quantity of headwater streams;
- moderate steam temperatures to support important fisheries;
- serve as a food source and building material to support viable beaver populations;
- reduce conifer encroachment and increase biodiversity;
- and, moderate excessive herbivory where appropriate.

LPDTs have prioritized aspen stands that are near or adjacent to energy development; associated with headwater streams and/or important fisheries; isolated and fringe stands at low elevations; within or near crucial habitats and migration corridors, especially those areas with excessive herbivory; and threatened by conifer encroachment. Most of these aspen areas were identified from monitoring and ecological assessments by WGFD, BLM, and WLCI funded projects, USGS, Teton Science School, and universities. The most common treatment approaches include the use of prescribed fire, mechanical removal, fencing, and tree planting. Planting activities are mostly limited to riparian and wetland areas. Targeted wildlife species that benefit from aspen treatments include elk, mule deer, beaver *(Castor canadensis)*, residential and migratory passerine birds, amphibians, and cutthroat trout and other fish species.

WLCI partners involved with aspen projects include private landowners, BLM, USFS, WGFD, County Conservation Districts, Grazing associations, Trout Unlimited, Rocky Mountain Elk Foundation, Mule Deer Foundation, and local sportsman and nature groups.

Mountain Shrub Structure and Regeneration

Mountain shrub communities are one of the more difficult plant communities to characterize in the WLCI area. Mountain shrubs can be associated in large dense patches to small isolated patches dominated by mountain sagebrush and other species. Mountain shrubs are typically located on hill slopes at low to high elevations as a dominant patch or as understory species in woodland settings. As a WLCI focal community, mountain shrubs generally include saskatoon serviceberry (*Amelanchier alnifolia*), true mountain mahogany (*Cercocarpus montanus*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*), chokecherry (*Prunus virginiana*), antelope bitterbrush (*Purshia tridentata*), sumac (*Rhus trilobata*), currant and gooseberries *(Ribes* spp.*),* and similar species. These species are not treated as a mountain shrub focal community when they are an understory component in aspen and other woodland communities. Mountain shrub communities are important to many game and non-game species.

Like aspen communities, mountain shrub communities in the WLCI area share many of the same issues and conservation needs. Issues include the lack of recruitment and regeneration, excessive herbivory, reduced age structure, invasive plant species, and encroachment of juniper. Mountain shrub communities are not typically well mapped and information about their age, stand structure, and condition is lacking in many areas. Data associated with the WGFD long-term monitoring of mountain shrub communities indicate that mountain shrubs have very little annual net leader growth and recruitment in areas associated with heavy browsing. There is also concern that mountain shrub communities that are located within or near crucial habitats are more severely impacted especially where energy development is occurring. LPDTs suggested giving mountain shrub communities within crucial winter habitats, transitional areas, within or near big game parturition areas, and areas adjacent to or within energy development. Some of the more specific locations within these areas reflect locations identified by the 2009 Wyoming Range Mule Deer Assessment and data and expertise by WGFD and BLM resource specialists.

LPDTs have identified treatment priorities to:

- maintain and protect functional mountain shrub communities and ensure connectivity between stands and seasonal habitats are maintained;
- facilitate ability of certain shrubs (e.g. chokecherry, mountain mahogany, serviceberry) to grow above browse heights;
- improve age and stand structure;
- restore mountain shrub diversity and abundance;
- reduce impacts from excessive herbivory and browsing; and
- remove juniper trees that are expanding and outcompeting deciduous mountain shrub species.

Treatment tools include prescribed fires, mechanical treatments, and fencing. More unique approaches identified include the use of fencing to increase snow accumulation for moisture and planting of shrubs to disperse ungulates and reduce browsing at stands that are being compromised. Ongoing and proposed treatments will support objectives related to the state mule deer initiative and Wyoming Range Mule Deer Plan.

WLCI partners involved with mountain shrub projects include BLM, USFS, WGFD, County Conservation Districts, permittees, Rocky Mountain Elk Foundation, and the Mule Deer Foundation.

Invasive Plant Species/ Tamarisk and Russian Olive Control and Removal

Addressing invasive plant species is typically a major component of many of the proposed conservation actions with WLCI partners so it is not surprising that it is also a major priority in the CAP. LPDTs are focused on the most aggressive invasive plants [e.g. toadflax *(Linaria spp.),* cheatgrass *(Bromus tectorum),* leafy spurge *(Euphorbia esula),* tamarisk, and perennial pepperweed *(Lepidium latifolium)*] in

areas that are most at risk or are associated with high priority areas like crucial winter habitats, transition areas, riparian corridors, and areas adjacent to rare and endemic plant species. Invasive plants near wilderness areas and important locations such as Areas of Critical Environmental Concern are also a priority. The final priority addresses post treatment monitoring and planting native species where appropriate to reduce chances of re-invasions.

LPDT members involved with invasive species have targeted the most aggressive or threatening species. In addition, invasive plant species just entering the WLCI area are targeted. Other priorities for dealing with invasive species are integrated with invasive species plans associated with County Conservation Districts, sage-grouse best management practices, and EIS mitigation activities. Many of the project leads are monitoring the effectiveness of treatment approaches and different herbicides applications and rates. The agriculture community (private landowners, permittees, and grazing associations) within the WLCI area is also very active with WLCI projects in controlling invasive plant species on private lands, state lands, and within allotments on BLM and USFS lands.

There have been numerous studies recently emphasizing the importance of controlling tamarisk as an effective approach to address prolonged droughts and climate change. Species such as tamarisk, cheatgrass, and the knapweeds are becoming more densely populated and expanding their distribution. Since 2008, WLCI has funded several projects designed to control or remove tamarisk in the WLCI area. These have predominantly been associated with larger lower elevation streams and rivers in Lincoln, Sweetwater, and Carbon counties. Geographic areas to control tamarisk and Russian olive are based on assessments and surveys by WLCI partners and resource specialists. The Teton Science School assessed tamarisk distribution and densities in the Green River below Fontenelle Dam to the southern boundary of Seedskadee National Wildlife Refuge.

A tamarisk focus group was formed by LPDT members to develop strategies to evaluate tamarisk distribution and treatment needs from Seedskadee NWR to Flaming Gorge. Their coordinated efforts aim to strategically inventory, prioritize, plan, implement, rehabilitate, and monitor multiple phased control projects. This overall approach will successfully control Russian olive and tamarisk while promoting sustainable native riparian tree and shrub communities along this corridor.

Participation includes WGFD, landowners, Sweetwater County Weed and Pest, Bureau of Reclamation, Seedskadee National Wildlife Refuge and other USFWS programs, Rock Spring Grazing Association, BLM field offices, the City of Green River Parks and Recreation, Green River Greenbelt Task Force, USFWS and Ashley National Forest. This project also serves as an example of the complexities of getting landowners interested for treating invasive species. These species are very adaptable and fast growing. As a result, these species provide shade and cover on private lands and even a golf course. In this case, native trees, large enough to replace mature tamarisk and Russian olive might be needed to entice landowners and other interested parties to control this species.

Another approach to treat tamarisk is to use biological controls especially in areas that are difficult to treat using herbicide treatments. This approach is closely being evaluated for its effectiveness and its ability to be applied in additional areas. The priorities for both of these approaches are to increase water supply and water quality, support fisheries, and reduce the fragmentation of riparian habitat.

Fish Passage and Aquatic Habitats

Numerous perennial streams in the WLCI area support sensitive fish populations. Some of the conservation objectives being addressed by LPDTs is to ensure sensitive fish species have access to as much suitable habitat as possible for seasonal and reproductive needs. This is primarily being accomplished through the removal of pilings and replacing diversion structures. Other

conservation objectives are aimed at reducing bank erosion, increasing the number and quality of pools, balancing pool to riffle ratios, and reducing the temperature of water at select locations. Additional priorities include increasing juvenile fish habitat, preventing hybridization between sucker species, and increasing water quantity and fish use in transitional areas (between cool water and warm water fish zones). LPDTs have prioritized fish species identified by WLCI partners as species of greatest conservation need. These include bluehead sucker, flannelmouth sucker, roundtail chub, Colorado River cutthroat trout, Bonneville cutthroat trout *(Oncorhynchus clarkii utah),* and northern leatherside chub. Proposed treatment priorities include:

- removing barriers and impediments to fish movement;
- creating or maintaining fish barriers where beneficial to specific species, protecting genetics;
- developing rock sills to improve hydrologic function and increase water flow to side channels and connectivity to adjacent wetlands;
- increasing population numbers of species of greatest conservation needs;
- removing or treating unwanted invasive fish species;
- reducing impacts from sedimentation resulting from erosion;
- reducing salinity and environmental contamination;
- and, increasing resilience of aquatic habitats to prolonged droughts and climate change.

Treatment approaches and treatment areas largely address WGFD Basin Management Plans and issues and needs identified for Aquatic Priority Areas. Project locations have been identified by BLM, USFS, County Conservation Districts, Trout Unlimited, and USFWS Partners Program.

One such stream that reflects the priorities related to fish passage and aquatic habitats is Muddy Creek south of Rawlins, Wyoming. Muddy Creek is one of the only streams in Wyoming where viable populations of Colorado River cutthroat trout, bluehead sucker, flannelmouth sucker, and roundtail chub coexist. Bluehead sucker, flannelmouth sucker, and roundtail chub populations have declined by about 50% range-wide. Issues and threats to these species in Muddy Creek include hybridization/competition with nonnative species, habitat fragmentation from in-stream structures, and loss of habitat. The removal of fish barriers is essential to the recovery and conservation of these species. With long-term commitments over the next 5 to 10 years, these fish species will have an estimated doubling of access to available habitats (more than 100 miles) that were previously unavailable for decades.

Numerous partners are involved with projects similar to these such as WGFD, BLM, USFS, US FWS Partners Program, NRCS, Little Snake Conservation District and other County Conservation Districts, and Trout Unlimited.

Stream and Riparian Function

Stream and riparian areas provide important functions across their entire watershed. Similar to wetlands, stream and riparian habitats make up only a small proportion of the land but support many invertebrate and vertebrate species with food, cover, and the ability to move across the landscape. Proper functioning riparian zones help control water temperature, reduce erosion and stream sedimentation, controls flooding, and recharge ground water, which in turn recharges stream flows that support many aquatic and terrestrial species during dry periods. Degraded riparian areas typically have less vegetation to protect and stabilize stream banks. This results in lowered water tables reducing summer stream flows and the green zone. This in turn reduces more riparian vegetation for wildlife and livestock, and other important functions.

The priority issues related to stream and riparian function identified by LPDT members are:

- loss of connectivity of riparian vegetation and riparian corridors;
- invasive species such as tamarisk, perennial pepperweed;
- riparian and bank erosion, stream down cutting;
- excessive sedimentation;
- loss or degraded adjacent wetland habitats;
- loss or reduced riparian shrubs and tree species (e.g. willow and cottonwood species);
- threats to fish and amphibian species of greatest conservation needs;
- and, threats to in-stream water flows.

The selection of geographic areas to address these issues were driven in part by WGFD aquatic enhancement and/or crucial priority areas identified in their strategic habitat plan. These include areas where riparian obligate species occur where species of greatest conservation needs are located. Other criteria used to select these areas include locations where issues could be comprehensively addressed at watershed scales and where there is a strong conservation need and an interest by private landowners to be involved with conservation activities or strategic locations that would benefit from habitat leasing and conservation easements.

Priority treatments are designed to promote a diverse and healthy riparian vegetation community by planting native tree and shrubs, and reducing and controlling invasive plant species. These activities will connect important riparian areas with other important habitats and improve movement corridors.

Conservation Actions on Agricultural and Other Private Lands

There are two major types of surface ownership in southwestern Wyoming; private lands, which are predominantly related to livestock production, and federally managed lands by BLM or USFS, which facilitate livestock production along with other multiple uses. Although private lands are only a small portion of the WLCI area, they typically contain some of the more important and productive wildlife habitat. Private and federal lands are often connected physically and ecologically in southwest Wyoming. These lands include crucial wildlife habitat during winter, breeding and nesting areas, and seasonal movement and migration corridors. Ranches commonly make up the largest blocks of private land in southwest Wyoming. Agricultural lands are typically situated along valley bottoms, streams, and floodplains. These lands support biologically diverse riparian habitat and wetlands, seeps, and springs in the WLCI area. In addition, irrigation practices create monoculture plant communities to feed and support livestock while benefiting numerous species of wildlife including sage-grouse and other important species. While livestock production varies with livestock numbers and type, producers share the common goal to provide income while still protecting and/or improving their lands and natural resources so they may continue to provide for their livelihoods into the future.

The WLCI recognizes the importance of private lands to meet local and landscape level conservation objectives and encourages their participation with the LPDTs. In addition, many WLCI partners have programs (for example, Conservation Districts, Grazing Associations, BLM, USFS, County Weed and Pest Districts, NRCS, and US FWS Partners Program) specifically designed to reach out to and assist with conservation projects. As part of these programs, landowners are involved with projects that address water quality and quantity, spring and wetland development, controlling invasive species, and conducting numerous other activities that support both common and uncommon wildlife species. Conservation efforts also include changes in livestock operations or utilizing livestock as a tool to manage vegetation effectively. While there are numerous conservation projects located on private lands or include private landowner participation proposed in this plan, these projects would benefit if the various WLCI partner programs were more involved. There is a need to better integrate these programs with WLCI and where feasible, collaborate on common conservation objectives and priority areas. The more integrated

these programs are the more likely conservation accomplishments will have implications at more ecologically relevant scales.

The WLCI will continue to work with private landowners, grazing associations, and others to ensure their involvement to expand conservation actions on private lands to meet conservation priorities and objectives laid out in the plan. Over the next five years, these activities will include:

- more effective communication and collaboration between private landowners and LPDTs and provide more assistance to participate in the WLCI proposal and funding cycle;
- the evaluation of new and existing agriculture/conservation-based programs that would further enable WLCI to address conservation issues and actions on private lands;
- increasing outreach efforts to industry partners to provide support and tools to help address future conservation issues and actions that can be used specifically on private lands such as habitat leasing and off-site mitigation;
- identifying and prioritizing locations where important habitat areas overlap with private, state, and federally managed lands;
- and, evaluating and implementing suitable conservation tools, approaches and ecological services to protect, maintain, enhance and restore important WLCI priority areas. These may include use of forage reserves, habitat leases, conservation easements, addressing invasive plant species across ownership boundaries, utilization of grazing approaches to meet conservation targets, and native seed production for restoration efforts.

Collectively these actions blur the line between ownership boundaries ensuring more effective conservation actions that are more ecologically significant. Landowners who can provide targeted ecological services or protective activities will be compensated for these services, which may help sustain agricultural operations and their ecological connections.

Native Seed Collection and Vegetative Propagation

The WLCI works collaboratively with BLM's Seeds of Success (SOS) program, which is part of the federal interagency Native Plant Materials Development Program. Involvement with this program ensures WLCI has the ability to collect native seed that is more suited to be developed and used locally in restoration and reclamation activities. Additional seed collection activities are being planned so collected seeds can be used directly in WLCI habitat treatments. Some of these collected native seeds will be used in areas to replace invasive plant species to reduce their ability to reestablish. At other locations, these seed collections will be broadcast to increase plant diversity and abundance while minimally disturbing the area. WLCI partners and reclamation experts have expressed an interest to increase collections of forb species. This is because there are fewer choices for purchasing or acquiring herbaceous species compared to grasses and because forbs are much more difficult to establish.

During the next five years, WLCI is evaluating the potential to develop a local capacity to develop seeds and propagules for local use. If this approach can be fully implemented, this would provide extra funds to local growers and possibly support a small cottage industry to supply native seeds, seedlings, and propagules for large reclamation projects. WLCI will continue to work with the Seeds of Success program and the BLM Botany Program Coordinator to help implement seed collection activities when appropriate. Assistance may also include the identification of plant species, suitable seed collection areas, and documentation of vegetation and ecological information at collection sites. The CT will coordinate with LPDTs to identify potential local growers and with energy companies and others doing reclamation to conduct field trials.

Part II: Summaries of Local Project Development Team Conservation Priorities and Actions

Part II briefly summarizes the primary collective geographic areas, landscape conservation priorities, issues, conservation objectives, and actions for each Local Project Development Team. This section succinctly tells the story about the primary conservation issues and objectives and the collective actions to address them, setting the stage for more detailed information for each priority area and associated habitat projects in Part III. Tables and maps in this section identify the areas in which LPDT members are addressing the landscape conservation priorities discussed in Part I. Additional maps in Part III delineate priority area boundaries and display project locations within each priority area.

Carbon Local Project Development Team

The Carbon Local Project Development Team (LPDT) identified eight geographic areas (figure 2-1). These geographic areas and their relationship to the WLCI landscape conservation priorities are illustrated in figure 2-2. The primary focal species being addressed at each geographic area are presented in table 2-1.

The Upper North Platte area is a large polygon encompassing three smaller areas. These are the North Platte Riparian Corridor, Encampment River Riparian Corridor, and Platte Valley Mule Deer Initiative area. Since these three sub-priority areas share many of the same issues across the landscape, but have differing objectives to reach their goals, they were placed in the much broader heading as Upper North Platte. This priority area deals with maintaining and enhancing crucial habitats for big game and their migration routes; increasing age class structure and density of aspen, sagebrush, and mountain shrub species; improving watershed function for the sport fish community; and it has an invasive plant component. All eight priority areas need to control invasive weed species. LPDT members have identified objectives for many of the priority areas to improve vegetation for fish and wildlife species; sagebrush, aspen, mountain shrub, and riparian communities have been identified. Other priorities deal with movements of fish and wildlife; improving crucial habitats, connectivity, and corridors. All eight of these priority areas, identified by the Carbon LPDT, address all of WLCI's focal communities (aspen, aquatic, sagebrush, riparian, and mountain shrub) and landscape priorities (table 2-1) through either mechanical, chemical, biological, or a combination of the three methods. The team has identified flannelmouth suckers, blue head suckers, roundtail chubs, Colorado River cutthroat trout, sport fish, elk, mule deer, sage-grouse, aspen and cottonwood trees as species expected to benefit from the treatments. Detailed descriptions of Carbon LPDT conservation actions are provided in Part III.

The objectives for this team are to:

- Control tamarisk, Russian olive, perennial pepperweed, cheatgrass, and other invasive species within the North Platte River, Little Snake River, and Muddy Creek watersheds for focal fish species and riparian health.
- Establish native riparian tree and shrub species at select locations throughout the North Platte River, Little Snake River and Muddy Creek watersheds and other important locations.
- Promote diverse age class structure in aspen and mountain shrub communities, increase stand resilience and aspen densities, and implement actions to reduce conifer encroachment and excessive browsing.
- Protect, maintain, and enhance important or crucial habitats and corridors for mule deer, elk, and other big game species.
- Maintain and restore species ranges for SGCN fish species (Colorado River cutthroat trout, flannelmouth sucker, bluehead sucker, and roundtail chub).

- Conduct restoration activities for SGCN aquatic species (Colorado River cutthroat trout, flannelmouth sucker, bluehead sucker, and roundtail chub) to ensure species resilience to changing weather and climate patterns.
- Improve riparian function by installing updated diversion structures, fish passages, and culverts on public and private lands.

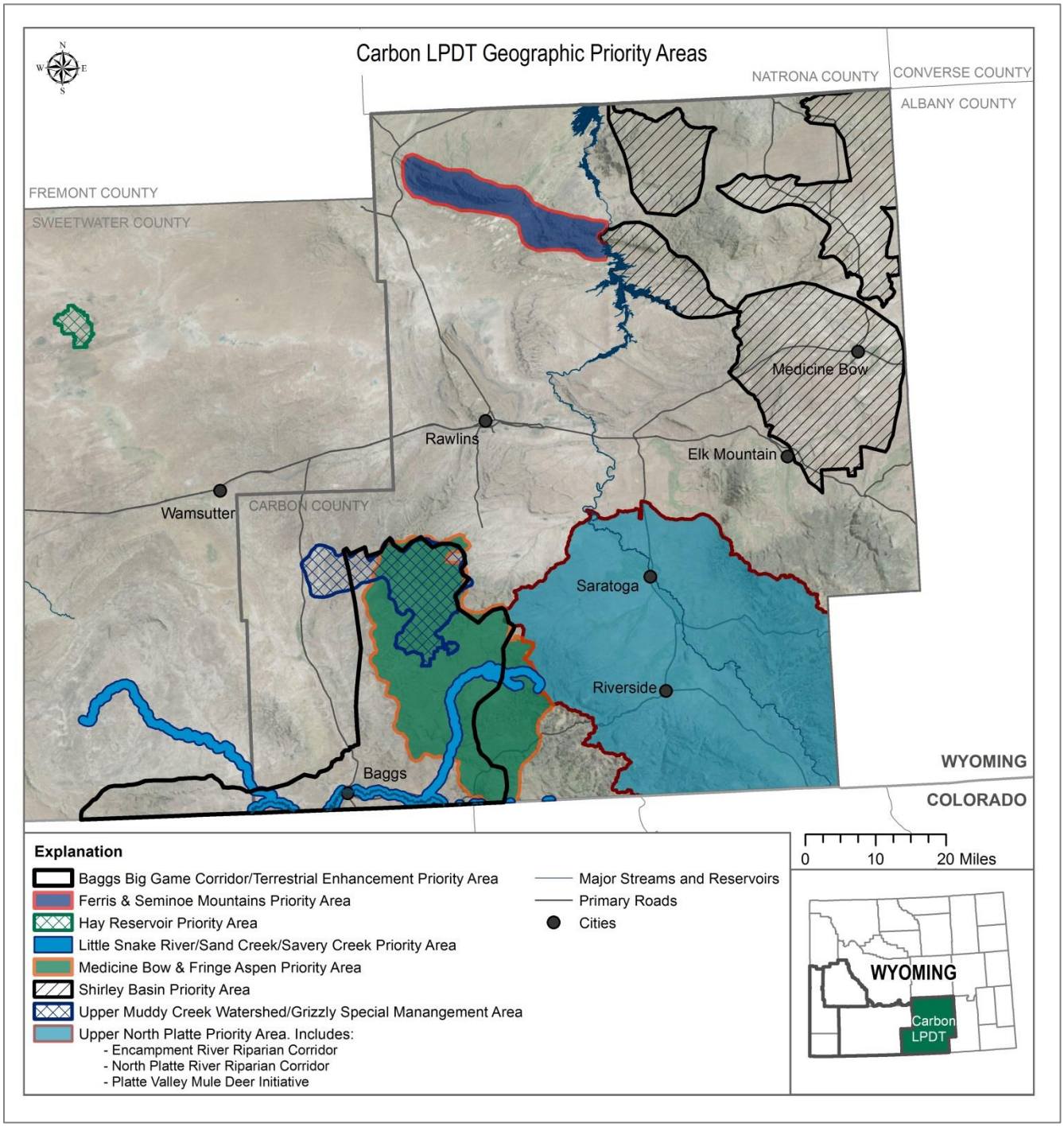


Figure 2-1. Carbon LPDT geographic priority areas.

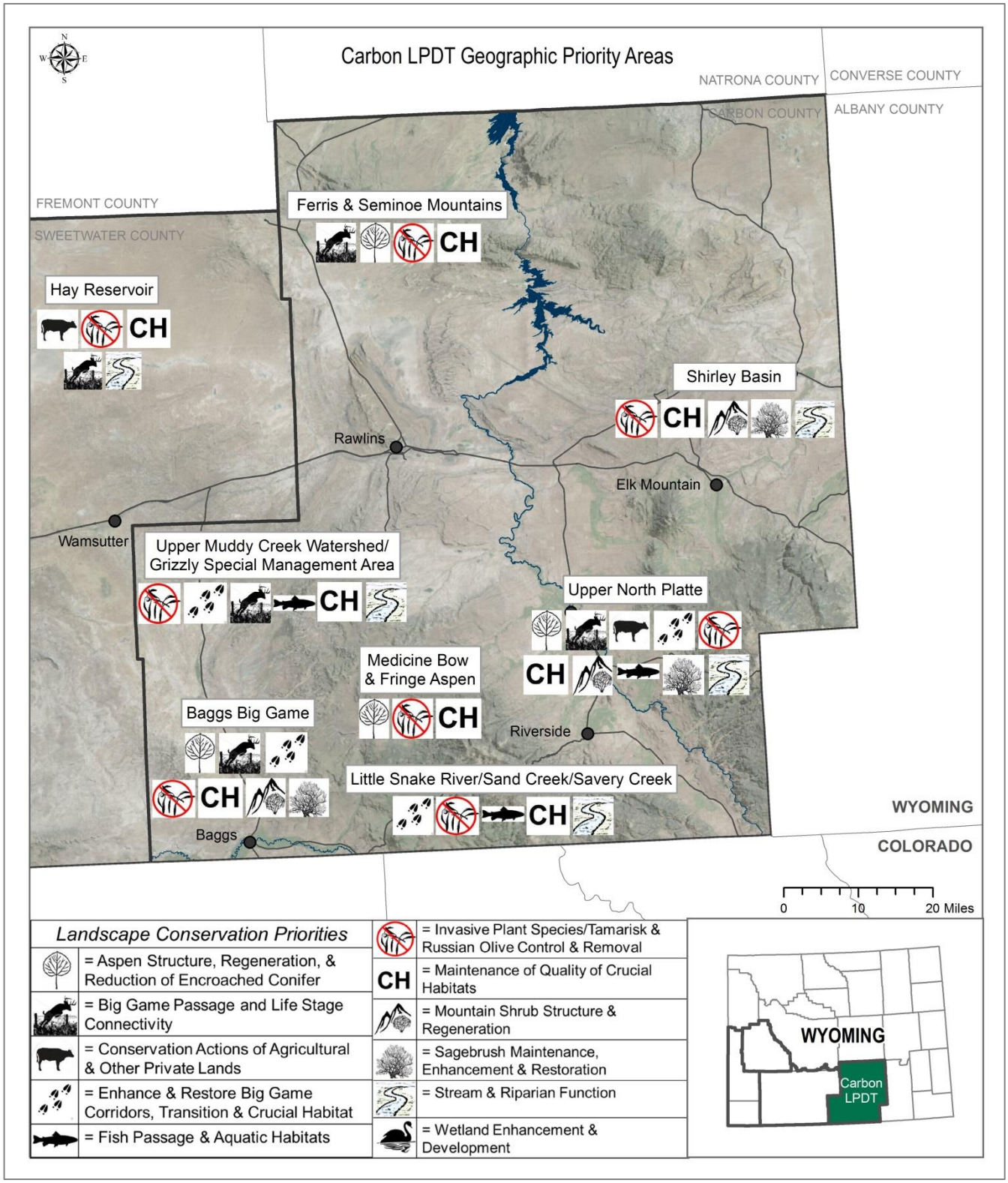


Figure 2-2. Landscape conservation priorities and geographic areas addressed by Carbon LPDT.

Table 2-1. Landscape conservation priorities and focal species addressed by the Carbon LPDT.

LPDT Priority Area	Landscape Conservation Priorities[1]										Focal Species
	Wetlands	Maintain Crucial Habitats	Big Game Connectivity	Corridors & Crucial Habitats	Sage-brush	Aspen	Mountain Shrub	Invasive Plants	Fish and Aquatics	Riparian	Ag	
Baggs Big Game		X	X	X	X	X	X	X				mule deer
Ferris & Seminoe Mountains		X	X			X		X				aspen, leafy spurge, mule deer
Little Snake River/Savery Creek/Sand Creek		X		X				X	X	X		tamarisk, perennial pepperweed
Medicine Bow & Fringe Aspen		X				X		X				aspen
Shirley Basin/ Medicine Bow River		X			X		X	X		X		cottonwood, perennial pepperweed, sagebrush, sage- grouse
Upper Muddy Creek Watershed/Grizzly SMA		X	X	X				X	X	X		mule deer, elk, bluehead sucker, flannelmouth sucker, roundtail chub, CRCT
Hay Reservoir		X	X					X		X	X	Russian knapweed, whitetop
Upper North Platte Habitat:												
• *North Platte Riparian Corridor*				X				X	X	X		cottonwood, sport fish
• *Encampment River Riparian Corridor*								X	X	X		cottonwood, sport fish
• *Platte Valley Mule Deer Initiative (includes Pennock Mountain WHMA, Baggot Rocks and Condict Ranch)*		X	X	X	X	X	X	X			X	mule deer, cheatgrass, juniper, sage grouse

[1] Complete landscape priority titles are: Wetland enhancements and development; Maintenance of quality of crucial habitats; Big game passage & life stage connectivity; Enhancement & restoration of big game corridors, transition and crucial habitats; Sagebrush maintenance, enhancement & restoration; Aspen structure, regeneration, and reduction of encroached conifer species; Mountain shrub structure and regeneration; Invasive plant species, tamarisk & Russian olive control and removal; Fish passage & aquatic habitats; Stream and riparian function; Conservation actions on Agriculture & other private lands. CRCT = Colorado Cutthroat Trout.

Lincoln/Uinta Local Project Development Team

The Lincoln/Uinta Local Project Development Team (LPDT) has identified four priority areas (figure 2-3). The relationship between geographic areas and WLCI landscape conservation priorities are illustrated in figure 2-4. The primary focal species being addressed at each geographic area is presented in table 2-2. Two of the four areas (Bear River and Wyoming Range West) include smaller areas that share many of the same issues across the landscape but have differing objectives to reach their goals. The Bear River addresses the creation, enhancement, and maintenance of wetlands; improvements to the riparian ecosystems, fish passage, and invasive species. The Wyoming Range West priority area deals with maintaining and enhancing crucial habitats for fish and wildlife and their migration routes; increasing age class structure and density of aspen, sagebrush, and mountain shrub species; improving watershed function to aid the restoration of the Bonneville cutthroat trout; and invasive plant control. All four priority areas have projects designed to address invasive weed species across the landscape. The Blacks Fork River & Muddy Creek priority area has identified improvements to riparian areas, as well as controlling invasive weed species. The RCCN (Rock Creek, Carter Lease, Cumberland, and Nugget Canyon) priority area addresses improvements to benefit wildlife (aspen, mountain shrub, and sagebrush treatments;
connectivity between various ranges, maintaining and enhancing migration corridors and crucial habitats).

The Lincoln/Uinta LPDT has addressed all of WLCI's focal communities (aspen, aquatic, sagebrush, riparian, and mountain shrub) in these four priority areas, and will use a number of methods (mechanical, chemical, biological, or a combination of the three methods) to achieve their goals (table 2-2). The team has identified elk, mule deer, pronghorn, sage-grouse, Colorado River, Bonneville and Snake River cutthroat trout, and leatherside chub as species to benefit from the treatments; they have targeted cheatgrass, tamarisk, thistle species, dalmatian toadflax, Dyer's woad *(Isatis tinctoria)*, perennial pepperweed, and black henbane *(Hyoscyamus niger)* as vegetative communities to control. Detailed descriptions of Carbon LPDT conservation actions are provided in Part III.

The objectives for this team are:

- Restore and maintain wetlands for ecosystem integrity associated with identified focal fish and wildlife species;
- Control invasive species for riparian and range health;
- Promote diverse age class structure in aspen and mountain shrub communities, increase stand resilience and aspen densities, reduce negative impact of excessive browsing, and reduce conifer encroachment;
- Protect, maintain, and enhance important or crucial habitats and corridors for big game species;
- Maintain and extend species ranges for SGCN fish species;
- Conduct restoration activities for SGCN aquatic species to ensure species resilience in the face of changing climate;
- Improve riparian function by updating diversion structures and fish passages on public and private lands.

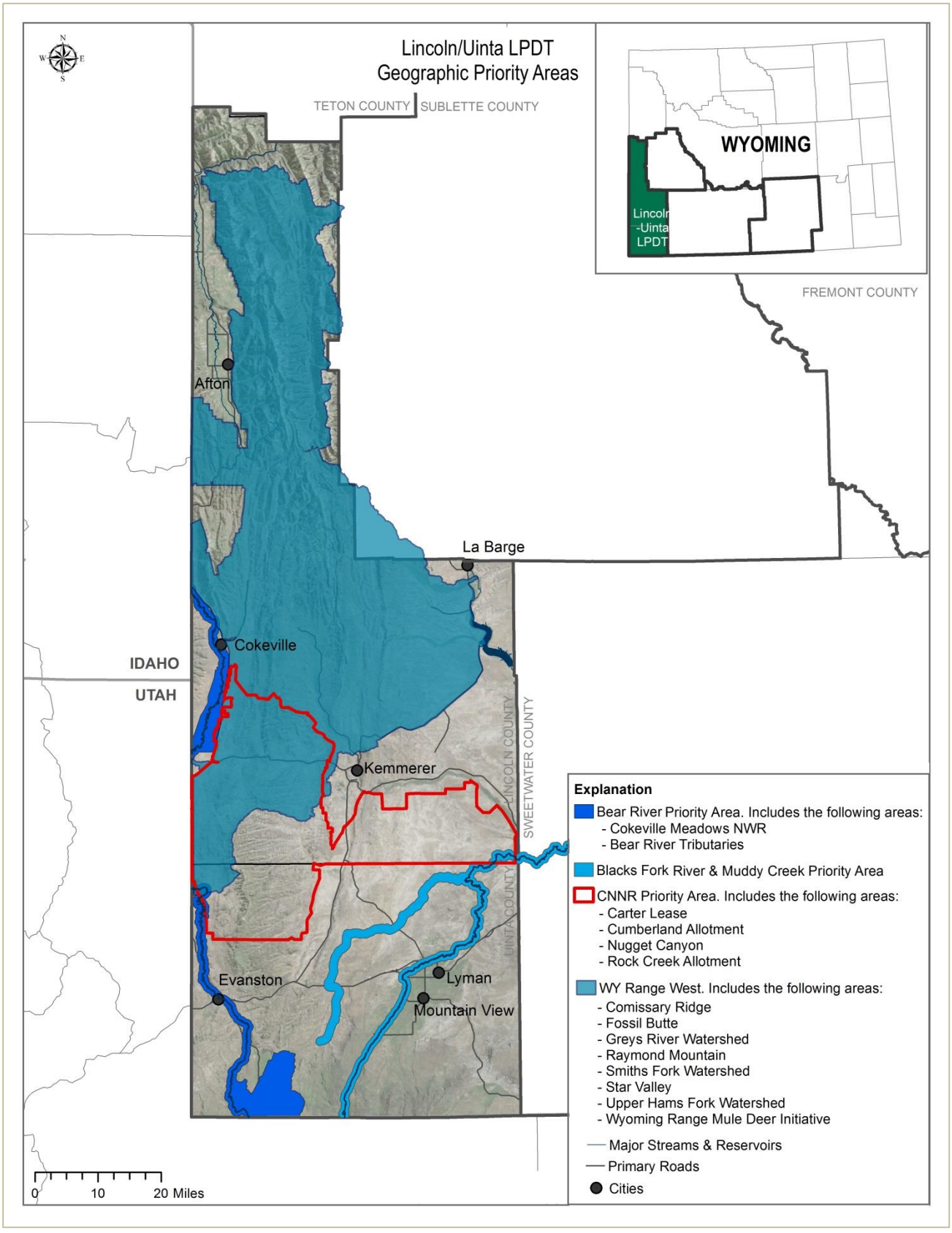


Figure 2-3. Lincoln/Uinta LPDT geographic priority areas.

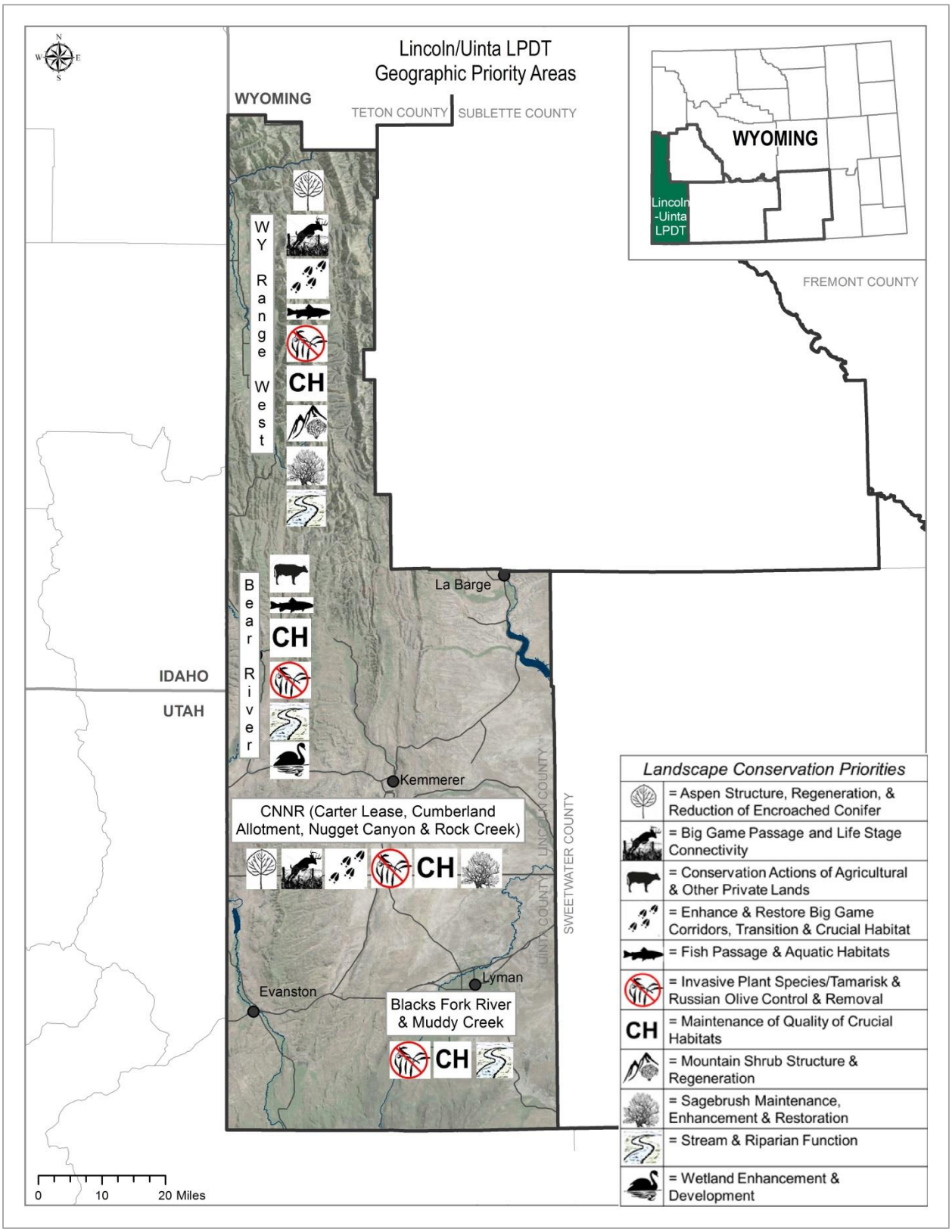


Figure 2-4. Landscape conservation priorities and geographic areas addressed by Lincoln/Uinta LPDT.

Table 2-2. Landscape conservation priorities and focal species addressed by the Lincoln/Uinta LPDT.

LPDT Priority Area	Landscape Conservation Priorities[1]											Focal Species
	Wetlands	Maintain Crucial Habitats	Big Game Connectivity	Corridors & Crucial Habitats	Sage-brush	Aspen	Mountain Shrub	Invasive Plants	Fish and Aquatics	Riparian	Ag	
Bear River Corridor:												
• *Cokeville NWR*	X	X						X			X	Elk, migratory birds
• *BR Tributaries associated with focal species*								X	X	X		BCT, leatherside chub, bluehead sucker
Blacks Fork River & Muddy Creek	X							X		X		tamarisk, perennial pepperweed
Carter Lease, Cumberland Allotment, Nugget Canyon & Rock Creek Allotment		X	X	X	X	X		X				big game species, sage-grouse, invasive plant species
Wyoming Range West:												
• *Fossil Butte NM*			X					X				thistle, cheatgrass, perennial pepperweed
• *Raymond Mountain*								X				dyer's woad, dalmatian toadflax
• *Greys River Watershed*						X	X	X	X	X		SRCT
• *Upper Hams Fork Watershed*						X	X	X	X	X		CRCT
• *Smith's Fork Watershed*						X	X	X	X	X		BCT
• *Commissary Ridge*		X										whitebark pine
• *Star Valley*						X	X	X				aspen
• *WY Range Mule Deer Initiative*		X	X	X	X	X	X	X				big game species, aspen, mountain shrubs

[1] Complete landscape priority titles are: Wetland enhancements and development; Maintenance of quality of crucial habitats; Big game passage & life stage connectivity; Enhancement & restoration of big game corridors, transition and crucial habitats; Sagebrush maintenance, enhancement & restoration; Aspen structure, regeneration, and reduction of encroached conifer species; Mountain shrub structure and regeneration; Invasive plant species, tamarisk & Russian olive control and removal; Fish passage & aquatic habitats; Stream and riparian function; Conservation actions on Agriculture & other private lands. BCT = Bonneville Cutthroat Trout, CRCT = Colorado Cutthroat Trout SRCT = Snake River Cutthroat Trout.

Sublette Local Project Development Team

The Sublette Local Project Development Team (LPDT) has identified four priority areas (figure 2-5). The relationship between geographic areas and WLCI landscape conservation priorities are illustrated in figure 2-6. The primary focal species being addressed at each geographic area is presented in table 2-3. One area, the Wyoming Range East, is a large polygon with three sub-priority areas; Cottonwood Creek and Horse Creek watersheds; Wyoming Front Aspen Area; and Wyoming Range Mule Deer Focus Area. Since these three sub-priority areas share many of the same issues across the landscape, but have differing objectives to reach their goals, they were placed in the much broader heading as Wyoming Range East.

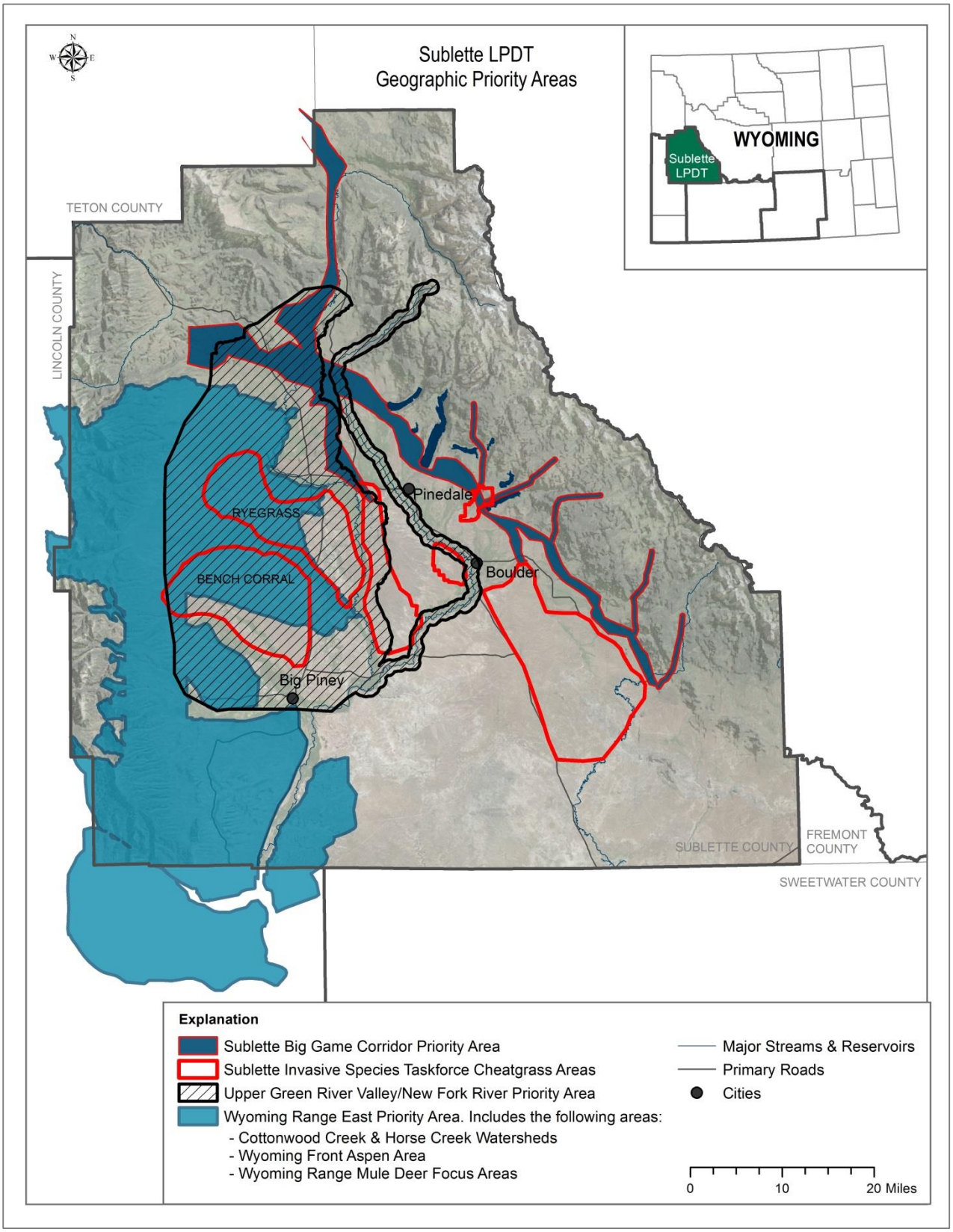
The Wyoming Range East priority area deals with maintaining and enhancing crucial habitats for big game and their migration routes; increasing age class structure and density of aspen, sagebrush, and mountain shrub species; improving watershed function to aid the restoration of the Colorado River cutthroat trout; and conducting assessments and treatments to control cheatgrass on crucial habitats. Conservation efforts in the Upper Green River Valley/New Fork River Priority Area are focused on creating wetlands and maintaining or enhancing existing wetland. Numerous priority areas are focusing on threats associated with cheatgrass. The Sublette County Invasive Species Taskforce is assessing the distribution of cheatgrass, prioritizing treatment locations, and actively engaged with its partners to control cheatgrass. Post-treatment monitoring information is being used to identify the most effective methods to control cheatgrass. The final priority area addresses migration corridors and big game connectivity.

The Sublette LPDT has addressed all of WLCI's focal communities (aspen, aquatic, sagebrush, riparian, and mountain shrub) in these four priority areas, and will use a number of methods (mechanical, chemical, biological, or a combination of the three methods) to achieve their goals (table 2-3). Forage reserves have been established within and outside of geographic priority boundaries to ensure habitat treatments are rested sufficiently. Forage reserves provide alternative forage for livestock so they can be removed from treatment locations allowing sufficient time for vegetation to recover. This team has targeted conservation actions to benefit CRCT, elk, lynx, mule deer, pronghorn, pygmy rabbits, sage-grouse, and trumpeter swans. The Sublette LPDT identified cheatgrass as a serious threat because of its rapid expansion into sage-grouse core habitat and crucial winter range for mule deer and other wildlife. This team will continue efforts to control cheatgrass abundance and distribution. Detailed descriptions of Sublette LPDT conservation actions are provided in Part III.

The objectives for this team are:

- Restore and maintain wetlands for focal fish species and trumpeter swans and other wildlife species;
- Control infestation of cheatgrass throughout the county with the aid of the many partners on the Sublette County Invasive Species Taskforce;
- Enhance native riparian tree and shrub species at select locations along the Green River, New Fork River, Cottonwood Creek, Horse Creek, and other important locations;
- Promote diverse age class structure in aspen, sagebrush, and mountain shrub communities, increase stand resilience, aspen densities, and implement actions to reduce conifer encroachment and excessive browsing;
- Protect, maintain, and enhance important or crucial habitats and corridors for mule deer, elk, and other big game species;
- Maintain and restore species ranges for Colorado River cutthroat trout;
- Improve riparian function by installing updated diversion structures, fish passages, and culverts on public and private lands on Upper Green River, New Fork River, Cottonwood Creek, and Horse Creek.

Figure 2-5. Sublette LPDT geographic priority areas.



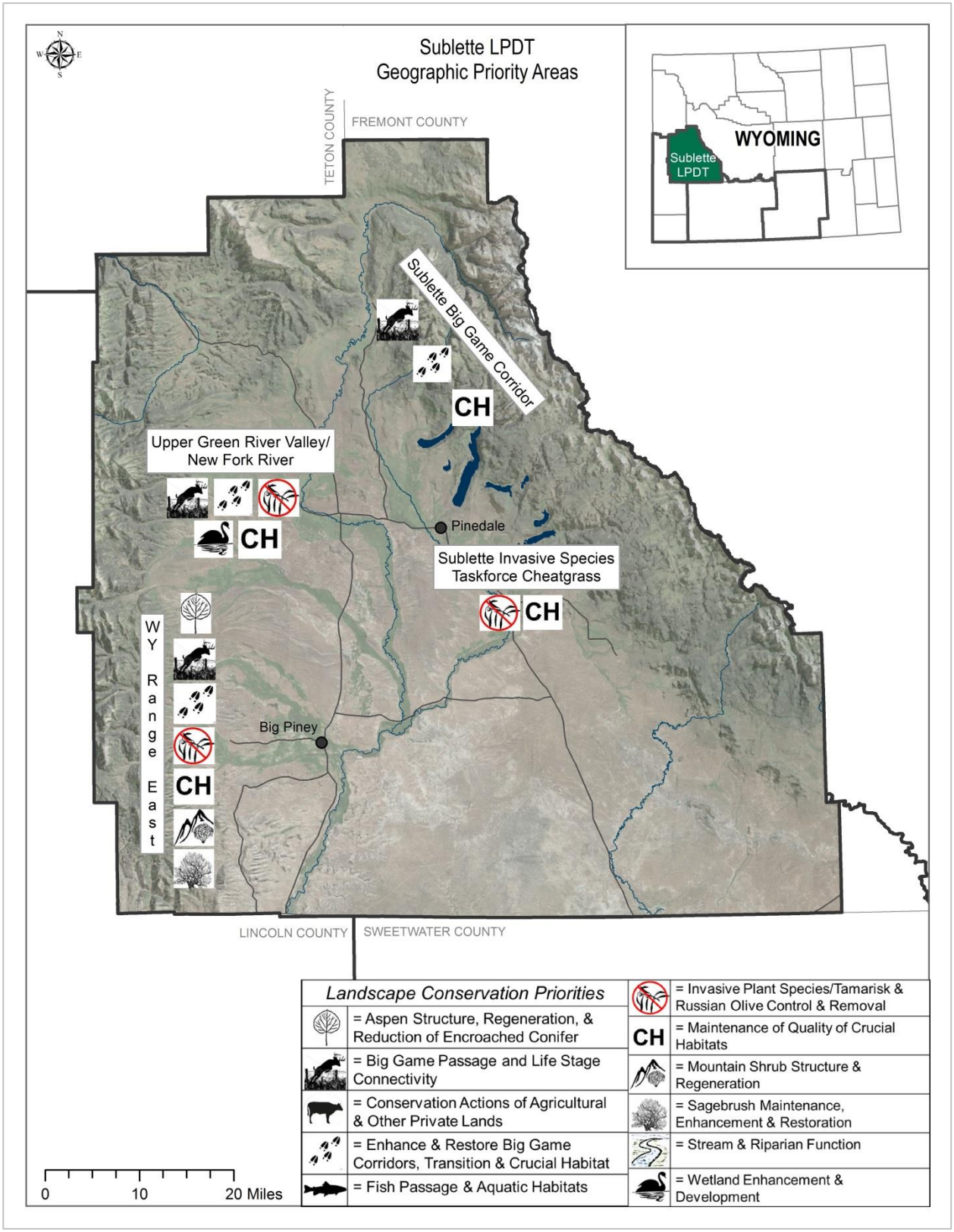


Figure 2-6. Landscape conservation priorities and geographic areas addressed by Sublette LPDT.

Table 2-3. Landscape conservation priorities and focal species addressed by the Sublette LPDT.

LPDT Priority Area	Landscape Conservation Priorities[1]											Focal Species
	Wetlands	Maintain Crucial Habitats	Big Game Connectivity	Corridors & Crucial Habitats	Sage-brush	Aspen	Mountain Shrub	Invasive Plants	Fish and Aquatics	Riparian	Ag	
Sublette Big Game Corridor		X	X	X								mule deer, pronghorn
Sublette Invasive Species Taskforce Cheatgrass Area		X						X				cheatgrass
Upper Green River Valley/New Fork River	X	X	X	X				X				cheatgrass, mule deer, pronghorn, pygmy rabbit, trumpeter swan
Wyoming Range East												
• *Cottonwood Creek & Horse Creek Watersheds*		X	X	X		X	X	X	X	X		CRCT, elk, mule deer, pronghorn, sage-grouse
• *WY Front Aspen Area*		X	X	X		X						elk, moose, mule deer, lynx
• *WY Range Mule Deer Focus Areas*		X	X	X	X	X	X	X				mule deer, elk, sage-grouse, aspen, sagebrush, mountain shrub species

[1] Complete landscape priority titles are: Wetland enhancements and development; Maintenance of quality of crucial habitats; Big game passage & life stage connectivity; Enhancement & restoration of big game corridors, transition and crucial habitats; Sagebrush maintenance, enhancement & restoration; Aspen structure, regeneration, and reduction of encroached conifer species; Mountain shrub structure and regeneration; Invasive plant species, tamarisk & Russian olive control and removal; Fish passage & aquatic habitats; Stream and riparian function; Conservation actions on Agriculture & other private lands. CRCT = Colorado Cutthroat Trout.

Sweetwater Local Project Development Team

The Sweetwater Local Project Development Team (LPDT) has identified six priority areas within Sweetwater County (figure 2-7). One of the priority areas extends outside the county to Lincoln and Uinta counties (Blacks Fork River & Muddy Creek). All six areas address riparian ecosystem health and five of six areas address the control of invasive plant species. Primary invasive species include tamarisk and perennial pepperweed. Cottonwood trees, willow, buffaloberry and other tree and shrub species are being planted at many of the locations where tamarisk and other invasive species are being removed or controlled.

Past and future riparian improvements include efforts to reduce down cutting and bank erosion and fish passages on private and public lands (Bitter Creek, Gooseberry Creek, Henrys Fork and Trout Creek). Three priority areas (Little Mountain Ecosystem, Green River & Lower Big Sandy, and Seedskadee National Wildlife Refuge) are involved with the development, enhancement, or maintenance of wetlands for fish and wildlife species. Conservation efforts in these same priority areas are focused on protecting and restoring native fish assemblages and associated aquatic and riparian habitats. Conservation actions in the Little Mountain Ecosystem include efforts to maintain and enhance crucial habitats for big game and their migration routes; increase age class structure and density of aspen and mountain shrub species, reduce encroachment of conifer species, and increase aspen community resilience associated with drought and climate change along with the previously identified issues and actions.

All six of these geographic priority areas address all of WLCI's focal communities (aspen, aquatic, sagebrush, riparian, and mountain shrub) and landscape priorities (table 2-4) either through mechanical, chemical, biological, or a combination of the three methods. The team has identified flannelmouth suckers, roundtail chubs, Colorado River cutthroat trout, sport fish, elk, mule deer, trumpeter swan, sage-grouse, aspen and cottonwood trees as species expected to benefit from the treatments. Detailed descriptions of Sweetwater LPDT conservation actions are provided in Part III.

The objectives for this team are:

- Restore and maintain wetlands for focal fish species and trumpeter swans and other wildlife species;
- Control tamarisk, Russian olive, perennial pepperweed and other invasive species along the main stem of the Green River and tributaries important for focal fish species and riparian health;
- Establish native riparian tree and shrub species at select locations along the Green River, Bitter Creek, Red Creek, Sage Creek, and other important locations;
- Promote diverse age class structure in aspen and mountain shrub communities, increase stand resilience and aspen densities, and implement actions to reduce conifer encroachment and excessive browsing;
- Protect, maintain, and enhance important or crucial habitats and corridors for mule deer, elk, and other big game species;
- Maintain and restore species ranges for SGCN fish species (Colorado River Cutthroat trout, flannelmouth sucker, bluehead sucker, and roundtail chub);
- Conduct restoration activities for SGCN aquatic species (Colorado River Cutthroat trout, flannelmouth sucker, bluehead sucker, and roundtail chub) to ensure species resilience to changing weather and climate patterns;
- Improve riparian function by installing updated diversion structures, fish passages, and culverts on public and private lands on Bitter Creek, Gooseberry Creek, Henrys Fork and Trout Creek.

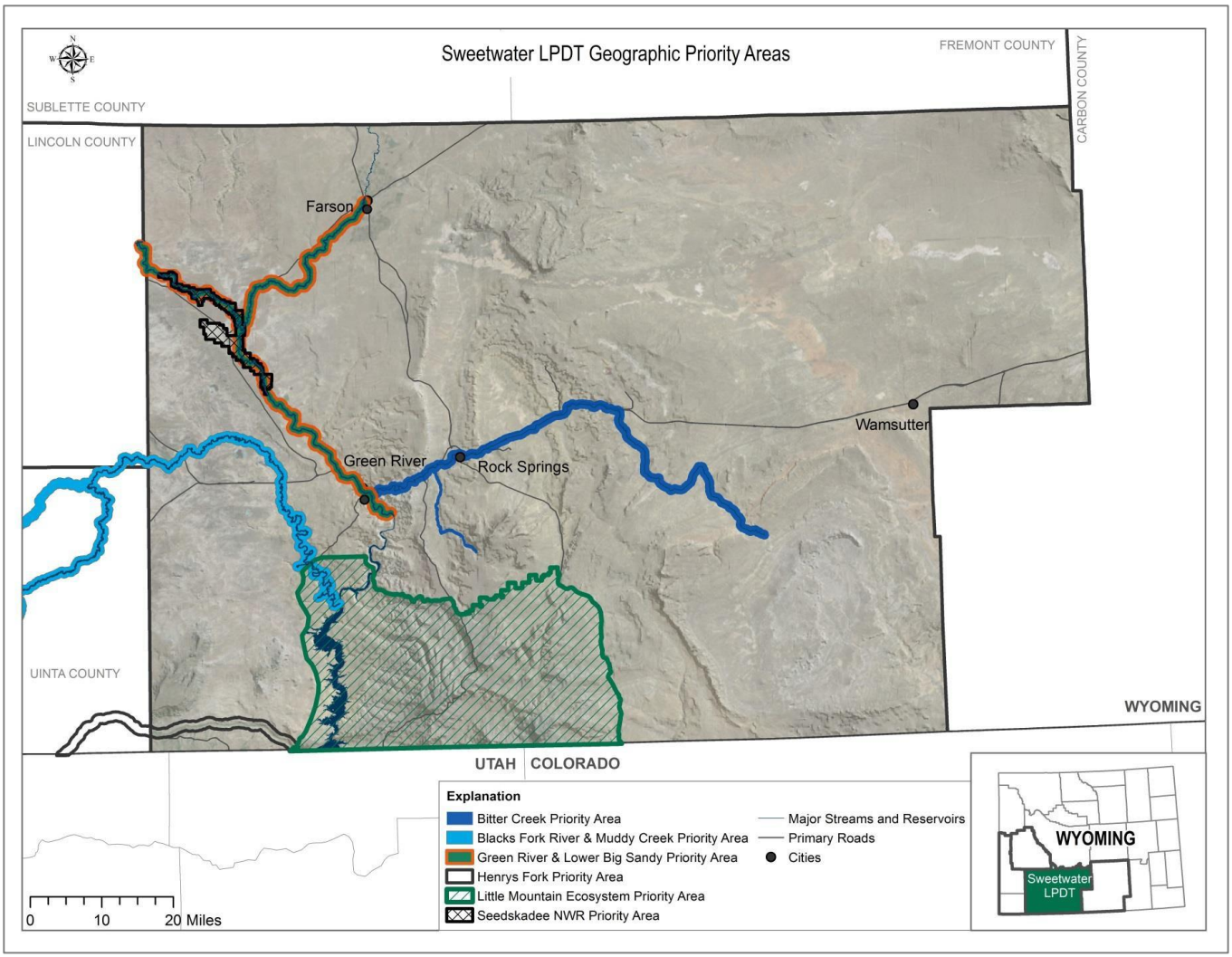


Figure 2-7. Sweetwater LPDT geographic priority areas.

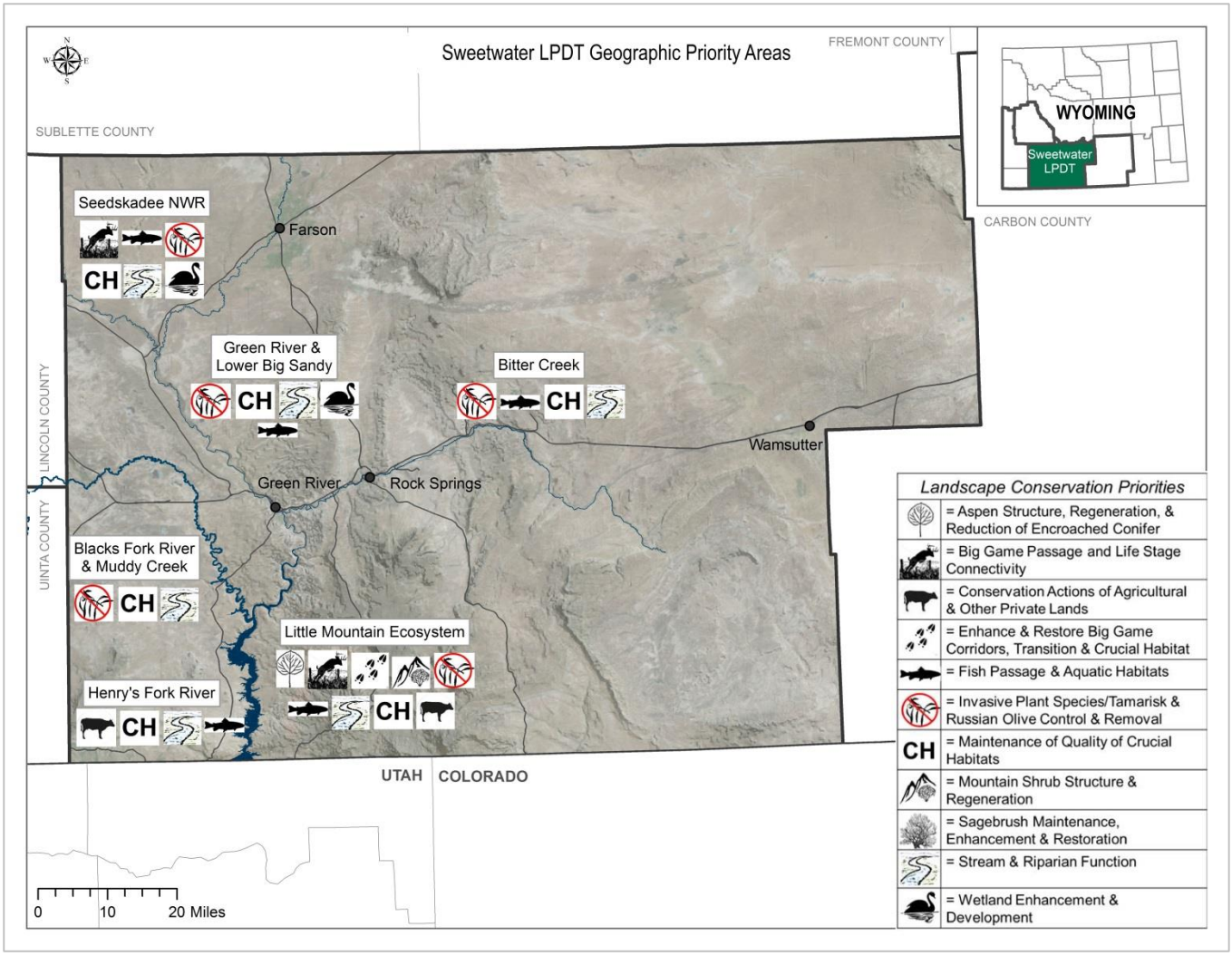


Figure 2-8. Landscape conservation priorities and geographic areas addressed by Sweetwater LPDT.

Table 2-4. Landscape conservation priorities and focal species addressed by the Sweetwater LPDT.

LPDT Priority Area	Landscape Conservation Priorities[1]											Focal Species
	Wetlands	Maintain Crucial Habitats	Big Game Connectivity	Corridors & Crucial Habitats	Sage-brush	Aspen	Mountain Shrub	Invasive Plants	Fish and Aquatics	Riparian	Ag	
Bitter Creek		X						X	X	X		flannelmouth sucker, roundtail chub, tamarisk, perennial pepperweed
Blacks Fork River & Muddy Creek		X						X		X		tamarisk
Green River & Lower Big Sandy	X	X						X	X	X		tamarisk, Russian olive, perennial pepperweed
Henrys Fork		X							X	X	X	CRCT, flannelmouth sucker, bluehead sucker
Little Mountain Ecosystem		X	X	X		X	X	X	X	X	X	CRCT, elk, mule deer, cheatgrass
Seedskadee NWR	X	X	X					X	X	X		trumpeter swan, cottonwood, tamarisk, Russian olive, sport fish

[1] Complete landscape priority titles are: Wetland enhancements and development; Maintenance of quality of crucial habitats; Big game passage & life stage connectivity; Enhancement & restoration of big game corridors, transition and crucial habitats; Sagebrush maintenance, enhancement & restoration; Aspen structure, regeneration, and reduction of encroached conifer species; Mountain shrub structure and regeneration; Invasive plant species, tamarisk & Russian olive control and removal; Fish passage & aquatic habitats; Stream and riparian function; Conservation actions on Agriculture & other private lands. CRCT = Colorado Cutthroat Trout.

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